

This print-out should have 12 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

Finish this by Weds at 6:00pm. Solutions can be downloaded after 6:01.

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**001 10.0 points**

According to Ohm's Law, if the resistance in a circuit is  $40\ \Omega$  and the voltage is  $4.8\text{ V}$ , what will be the current flow in the circuit?

1.  $35.2\text{ A}$
2.  $8.33333\text{ A}$
3.  $0.12\text{ A}$
4.  $192\text{ A}$
5.  $44.8\text{ A}$

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**002 10.0 points**

Which of the following is the formula for Ohm's law?

1.  $I = \frac{V}{R}$
2.  $P = IV$
3.  $E = Pt$
4.  $I = VR$

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**003 10.0 points**

A total charge of  $3.02\text{ mC}$  passes through a cross-sectional area of a wire in  $2.67\text{ s}$ .

What is the current in the wire?

Answer in units of  $\text{mA}$ .

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**004 10.0 points**

A  $1.18\text{ V}$  potential difference is maintained across a  $1.1\text{ m}$  length of tungsten wire that has a cross-sectional area of  $0.77\text{ mm}^2$ .

What is the current in the wire? The resistivity of the tungsten is  $5.6 \times 10^{-8}\ \Omega \cdot \text{m}$ .

Answer in units of  $\text{A}$ .

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**005 (part 1 of 2) 10.0 points**

An electric heater operating at full power draws a current of  $8.8\text{ A}$  from a  $142\text{ V}$  circuit.

What is the resistance of the heater?

Answer in units of  $\Omega$ .

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**006 (part 2 of 2) 10.0 points**

Assuming constant  $R$ , how much current should the heater draw in order to dissipate  $960\text{ W}$ ?

Answer in units of  $\text{A}$ .

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**007 (part 1 of 2) 10.0 points**

The wire in a house circuit is rated at  $19.1\text{ A}$  and has a resistance of  $0.29\ \Omega$ .

What is its power rating?

Answer in units of  $\text{W}$ .

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**008 (part 2 of 2) 10.0 points**

How much heat does the wire give off in  $17.9\text{ min}$ ?

Answer in units of  $\text{J}$ .

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**009 (part 1 of 4) 10.0 points**

An object with a resistance of  $38\ \Omega$  has  $90\text{ V}$  applied to it.

How much electric current is going through this object?

Answer in units of  $\text{amps}$ .

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**010 (part 2 of 4) 10.0 points**

How much power is being produced by the object?

Answer in units of  $\text{W}$ .

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**011 (part 3 of 4) 10.0 points**

How much electric energy will be needed to operate this object for  $14\text{ h}$ ?

Answer in units of  $\text{kWh}$ .

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**012 (part 4 of 4) 10.0 points**

What is the cost of operating this object for  $14\text{ h}$  at a rate of  $6.5\text{ cents/kWh}$ ?

Answer in units of  $\text{\$}$ .

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**001 10.0 points**

According to Ohm's Law, if the resistance in a circuit is  $45\ \Omega$  and the voltage is  $8.8\ \text{V}$ , what will be the current flow in the circuit?

1.  $0.195556\ \text{A}$
2.  $36.2\ \text{A}$
3.  $53.8\ \text{A}$
4.  $396\ \text{A}$
5.  $5.11364\ \text{A}$

---

**002 10.0 points**

Which of the following is the formula for Ohm's law?

1.  $E = Pt$
2.  $I = VR$
3.  $P = IV$
4.  $I = \frac{V}{R}$

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**003 10.0 points**

A total charge of  $8.49\ \text{mC}$  passes through a cross-sectional area of a wire in  $1.01\ \text{s}$ .

What is the current in the wire?

Answer in units of  $\text{mA}$ .

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**004 10.0 points**

A  $0.36\ \text{V}$  potential difference is maintained across a  $2.2\ \text{m}$  length of tungsten wire that has a cross-sectional area of  $0.5\ \text{mm}^2$ .

What is the current in the wire? The resistivity of the tungsten is  $5.6 \times 10^{-8}\ \Omega \cdot \text{m}$ .

Answer in units of  $\text{A}$ .

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**005 (part 1 of 2) 10.0 points**

An electric heater operating at full power draws a current of  $12.9\ \text{A}$  from a  $224\ \text{V}$  circuit.

What is the resistance of the heater?

Answer in units of  $\Omega$ .

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**006 (part 2 of 2) 10.0 points**

Assuming constant  $R$ , how much current should the heater draw in order to dissipate  $980\ \text{W}$ ?

Answer in units of  $\text{A}$ .

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**007 (part 1 of 2) 10.0 points**

The wire in a house circuit is rated at  $15.9\ \text{A}$  and has a resistance of  $0.3\ \Omega$ .

What is its power rating?

Answer in units of  $\text{W}$ .

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**008 (part 2 of 2) 10.0 points**

How much heat does the wire give off in  $14.4\ \text{min}$ ?

Answer in units of  $\text{J}$ .

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**009 (part 1 of 4) 10.0 points**

An object with a resistance of  $45\ \Omega$  has  $120\ \text{V}$  applied to it.

How much electric current is going through this object?

Answer in units of  $\text{amps}$ .

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**010 (part 2 of 4) 10.0 points**

How much power is being produced by the object?

Answer in units of  $\text{W}$ .

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**011 (part 3 of 4) 10.0 points**

How much electric energy will be needed to operate this object for  $29\ \text{h}$ ?

Answer in units of  $\text{kWh}$ .

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**012 (part 4 of 4) 10.0 points**

What is the cost of operating this object for  $29\ \text{h}$  at a rate of  $7.6\ \text{cents/kWh}$ ?

Answer in units of  $\$$ .

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**001 10.0 points**

According to Ohm's Law, if the resistance in a circuit is  $64\ \Omega$  and the voltage is  $2.5\ \text{V}$ , what will be the current flow in the circuit?

1.  $25.6\ \text{A}$
2.  $66.5\ \text{A}$
3.  $160\ \text{A}$
4.  $0.0390625\ \text{A}$
5.  $61.5\ \text{A}$

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**002 10.0 points**

Which of the following is the formula for Ohm's law?

1.  $I = \frac{V}{R}$
2.  $P = IV$
3.  $I = VR$
4.  $E = Pt$

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**003 10.0 points**

A total charge of  $6.98\ \text{mC}$  passes through a cross-sectional area of a wire in  $3.06\ \text{s}$ .

What is the current in the wire?

Answer in units of  $\text{mA}$ .

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**004 10.0 points**

A  $1.07\ \text{V}$  potential difference is maintained across a  $1\ \text{m}$  length of tungsten wire that has a cross-sectional area of  $0.4\ \text{mm}^2$ .

What is the current in the wire? The resistivity of the tungsten is  $5.6 \times 10^{-8}\ \Omega \cdot \text{m}$ .

Answer in units of  $\text{A}$ .

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**005 (part 1 of 2) 10.0 points**

An electric heater operating at full power draws a current of  $11.1\ \text{A}$  from a  $229\ \text{V}$  circuit.

What is the resistance of the heater?

Answer in units of  $\Omega$ .

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**006 (part 2 of 2) 10.0 points**

Assuming constant  $R$ , how much current should the heater draw in order to dissipate  $920\ \text{W}$ ?

Answer in units of  $\text{A}$ .

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**007 (part 1 of 2) 10.0 points**

The wire in a house circuit is rated at  $10.4\ \text{A}$  and has a resistance of  $0.19\ \Omega$ .

What is its power rating?

Answer in units of  $\text{W}$ .

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**008 (part 2 of 2) 10.0 points**

How much heat does the wire give off in  $21.4\ \text{min}$ ?

Answer in units of  $\text{J}$ .

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**009 (part 1 of 4) 10.0 points**

An object with a resistance of  $17\ \Omega$  has  $130\ \text{V}$  applied to it.

How much electric current is going through this object?

Answer in units of  $\text{amps}$ .

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**010 (part 2 of 4) 10.0 points**

How much power is being produced by the object?

Answer in units of  $\text{W}$ .

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**011 (part 3 of 4) 10.0 points**

How much electric energy will be needed to operate this object for  $15\ \text{h}$ ?

Answer in units of  $\text{kWh}$ .

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**012 (part 4 of 4) 10.0 points**

What is the cost of operating this object for  $15\ \text{h}$  at a rate of  $6.8\ \text{cents/kWh}$ ?

Answer in units of  $\$$ .

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**001 10.0 points**

According to Ohm's Law, if the resistance in a circuit is  $34\ \Omega$  and the voltage is  $7.3\text{ V}$ , what will be the current flow in the circuit?

1.  $4.65753\text{ A}$
2.  $26.7\text{ A}$
3.  $41.3\text{ A}$
4.  $0.214706\text{ A}$
5.  $248.2\text{ A}$

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**002 10.0 points**

Which of the following is the formula for Ohm's law?

1.  $I = VR$
2.  $E = Pt$
3.  $P = IV$
4.  $I = \frac{V}{R}$

---

**003 10.0 points**

A total charge of  $8.07\text{ mC}$  passes through a cross-sectional area of a wire in  $1.36\text{ s}$ .

What is the current in the wire?

Answer in units of  $\text{mA}$ .

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**004 10.0 points**

A  $0.77\text{ V}$  potential difference is maintained across a  $2\text{ m}$  length of tungsten wire that has a cross-sectional area of  $0.31\text{ mm}^2$ .

What is the current in the wire? The resistivity of the tungsten is  $5.6 \times 10^{-8}\ \Omega \cdot \text{m}$ .

Answer in units of  $\text{A}$ .

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**005 (part 1 of 2) 10.0 points**

An electric heater operating at full power draws a current of  $8.2\text{ A}$  from a  $166\text{ V}$  circuit.

What is the resistance of the heater?

Answer in units of  $\Omega$ .

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**006 (part 2 of 2) 10.0 points**

Assuming constant  $R$ , how much current should the heater draw in order to dissipate  $1050\text{ W}$ ?

Answer in units of  $\text{A}$ .

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**007 (part 1 of 2) 10.0 points**

The wire in a house circuit is rated at  $13.2\text{ A}$  and has a resistance of  $0.29\ \Omega$ .

What is its power rating?

Answer in units of  $\text{W}$ .

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**008 (part 2 of 2) 10.0 points**

How much heat does the wire give off in  $13\text{ min}$ ?

Answer in units of  $\text{J}$ .

---

**009 (part 1 of 4) 10.0 points**

An object with a resistance of  $36\ \Omega$  has  $170\text{ V}$  applied to it.

How much electric current is going through this object?

Answer in units of  $\text{amps}$ .

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**010 (part 2 of 4) 10.0 points**

How much power is being produced by the object?

Answer in units of  $\text{W}$ .

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**011 (part 3 of 4) 10.0 points**

How much electric energy will be needed to operate this object for  $19\text{ h}$ ?

Answer in units of  $\text{kWh}$ .

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**012 (part 4 of 4) 10.0 points**

What is the cost of operating this object for  $19\text{ h}$  at a rate of  $6.7\text{ cents/kWh}$ ?

Answer in units of  $\text{\$}$ .

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**001 10.0 points**

According to Ohm's Law, if the resistance in a circuit is  $37\ \Omega$  and the voltage is  $5.9\text{ V}$ , what will be the current flow in the circuit?

1.  $0.159459\text{ A}$
2.  $31.1\text{ A}$
3.  $42.9\text{ A}$
4.  $218.3\text{ A}$
5.  $6.27119\text{ A}$

---

**002 10.0 points**

Which of the following is the formula for Ohm's law?

1.  $I = \frac{V}{R}$
2.  $E = Pt$
3.  $I = VR$
4.  $P = IV$

---

**003 10.0 points**

A total charge of  $5.57\text{ mC}$  passes through a cross-sectional area of a wire in  $1.82\text{ s}$ .

What is the current in the wire?

Answer in units of  $\text{mA}$ .

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**004 10.0 points**

A  $1.21\text{ V}$  potential difference is maintained across a  $2.1\text{ m}$  length of tungsten wire that has a cross-sectional area of  $0.29\text{ mm}^2$ .

What is the current in the wire? The resistivity of the tungsten is  $5.6 \times 10^{-8}\ \Omega \cdot \text{m}$ .

Answer in units of  $\text{A}$ .

---

**005 (part 1 of 2) 10.0 points**

An electric heater operating at full power draws a current of  $9.7\text{ A}$  from a  $221\text{ V}$  circuit.

What is the resistance of the heater?

Answer in units of  $\Omega$ .

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**006 (part 2 of 2) 10.0 points**

Assuming constant  $R$ , how much current should the heater draw in order to dissipate  $890\text{ W}$ ?

Answer in units of  $\text{A}$ .

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**007 (part 1 of 2) 10.0 points**

The wire in a house circuit is rated at  $11.1\text{ A}$  and has a resistance of  $0.22\ \Omega$ .

What is its power rating?

Answer in units of  $\text{W}$ .

---

**008 (part 2 of 2) 10.0 points**

How much heat does the wire give off in  $6.4\text{ min}$ ?

Answer in units of  $\text{J}$ .

---

**009 (part 1 of 4) 10.0 points**

An object with a resistance of  $25\ \Omega$  has  $86\text{ V}$  applied to it.

How much electric current is going through this object?

Answer in units of  $\text{amps}$ .

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**010 (part 2 of 4) 10.0 points**

How much power is being produced by the object?

Answer in units of  $\text{W}$ .

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**011 (part 3 of 4) 10.0 points**

How much electric energy will be needed to operate this object for  $16\text{ h}$ ?

Answer in units of  $\text{kWh}$ .

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**012 (part 4 of 4) 10.0 points**

What is the cost of operating this object for  $16\text{ h}$  at a rate of  $8.9\text{ cents/kWh}$ ?

Answer in units of  $\text{\$}$ .

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**001 10.0 points**

According to Ohm's Law, if the resistance in a circuit is  $61\ \Omega$  and the voltage is  $5.6\text{ V}$ , what will be the current flow in the circuit?

1.  $55.4\text{ A}$
2.  $341.6\text{ A}$
3.  $10.8929\text{ A}$
4.  $66.6\text{ A}$
5.  $0.0918033\text{ A}$

---

**002 10.0 points**

Which of the following is the formula for Ohm's law?

1.  $E = Pt$
2.  $I = \frac{V}{R}$
3.  $I = VR$
4.  $P = IV$

---

**003 10.0 points**

A total charge of  $3.85\text{ mC}$  passes through a cross-sectional area of a wire in  $1.95\text{ s}$ .

What is the current in the wire?

Answer in units of  $\text{mA}$ .

---

**004 10.0 points**

A  $0.58\text{ V}$  potential difference is maintained across a  $1.7\text{ m}$  length of tungsten wire that has a cross-sectional area of  $0.51\text{ mm}^2$ .

What is the current in the wire? The resistivity of the tungsten is  $5.6 \times 10^{-8}\ \Omega \cdot \text{m}$ .

Answer in units of  $\text{A}$ .

---

**005 (part 1 of 2) 10.0 points**

An electric heater operating at full power draws a current of  $8.6\text{ A}$  from a  $184\text{ V}$  circuit.

What is the resistance of the heater?

Answer in units of  $\Omega$ .

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**006 (part 2 of 2) 10.0 points**

Assuming constant  $R$ , how much current should the heater draw in order to dissipate  $770\text{ W}$ ?

Answer in units of  $\text{A}$ .

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**007 (part 1 of 2) 10.0 points**

The wire in a house circuit is rated at  $20.8\text{ A}$  and has a resistance of  $0.12\ \Omega$ .

What is its power rating?

Answer in units of  $\text{W}$ .

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**008 (part 2 of 2) 10.0 points**

How much heat does the wire give off in  $8.5\text{ min}$ ?

Answer in units of  $\text{J}$ .

---

**009 (part 1 of 4) 10.0 points**

An object with a resistance of  $43\ \Omega$  has  $68\text{ V}$  applied to it.

How much electric current is going through this object?

Answer in units of  $\text{amps}$ .

---

**010 (part 2 of 4) 10.0 points**

How much power is being produced by the object?

Answer in units of  $\text{W}$ .

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**011 (part 3 of 4) 10.0 points**

How much electric energy will be needed to operate this object for  $14\text{ h}$ ?

Answer in units of  $\text{kWh}$ .

---

**012 (part 4 of 4) 10.0 points**

What is the cost of operating this object for  $14\text{ h}$  at a rate of  $7.7\text{ cents/kWh}$ ?

Answer in units of  $\$$ .

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**001 10.0 points**

According to Ohm's Law, if the resistance in a circuit is  $32\ \Omega$  and the voltage is  $3.3\text{ V}$ , what will be the current flow in the circuit?

1.  $35.3\text{ A}$
2.  $105.6\text{ A}$
3.  $0.103125\text{ A}$
4.  $28.7\text{ A}$
5.  $9.69697\text{ A}$

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**002 10.0 points**

Which of the following is the formula for Ohm's law?

1.  $E = Pt$
2.  $I = VR$
3.  $P = IV$
4.  $I = \frac{V}{R}$

---

**003 10.0 points**

A total charge of  $3.16\text{ mC}$  passes through a cross-sectional area of a wire in  $3.15\text{ s}$ .

What is the current in the wire?

Answer in units of  $\text{mA}$ .

---

**004 10.0 points**

A  $1.33\text{ V}$  potential difference is maintained across a  $1.6\text{ m}$  length of tungsten wire that has a cross-sectional area of  $0.43\text{ mm}^2$ .

What is the current in the wire? The resistivity of the tungsten is  $5.6 \times 10^{-8}\ \Omega \cdot \text{m}$ .

Answer in units of  $\text{A}$ .

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**005 (part 1 of 2) 10.0 points**

An electric heater operating at full power draws a current of  $13.7\text{ A}$  from a  $124\text{ V}$  circuit.

What is the resistance of the heater?

Answer in units of  $\Omega$ .

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**006 (part 2 of 2) 10.0 points**

Assuming constant  $R$ , how much current should the heater draw in order to dissipate  $810\text{ W}$ ?

Answer in units of  $\text{A}$ .

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**007 (part 1 of 2) 10.0 points**

The wire in a house circuit is rated at  $23.6\text{ A}$  and has a resistance of  $0.23\ \Omega$ .

What is its power rating?

Answer in units of  $\text{W}$ .

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**008 (part 2 of 2) 10.0 points**

How much heat does the wire give off in  $25.6\text{ min}$ ?

Answer in units of  $\text{J}$ .

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**009 (part 1 of 4) 10.0 points**

An object with a resistance of  $29\ \Omega$  has  $150\text{ V}$  applied to it.

How much electric current is going through this object?

Answer in units of  $\text{amps}$ .

---

**010 (part 2 of 4) 10.0 points**

How much power is being produced by the object?

Answer in units of  $\text{W}$ .

---

**011 (part 3 of 4) 10.0 points**

How much electric energy will be needed to operate this object for  $12\text{ h}$ ?

Answer in units of  $\text{kWh}$ .

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**012 (part 4 of 4) 10.0 points**

What is the cost of operating this object for  $12\text{ h}$  at a rate of  $7.8\text{ cents/kWh}$ ?

Answer in units of  $\text{\$}$ .

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**001 10.0 points**

According to Ohm's Law, if the resistance in a circuit is  $43\ \Omega$  and the voltage is  $3.5\ \text{V}$ , what will be the current flow in the circuit?

1.  $150.5\ \text{A}$
2.  $0.0813953\ \text{A}$
3.  $39.5\ \text{A}$
4.  $12.2857\ \text{A}$
5.  $46.5\ \text{A}$

---

**002 10.0 points**

Which of the following is the formula for Ohm's law?

1.  $E = Pt$
2.  $I = \frac{V}{R}$
3.  $P = IV$
4.  $I = VR$

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**003 10.0 points**

A total charge of  $6.33\ \text{mC}$  passes through a cross-sectional area of a wire in  $2.71\ \text{s}$ .

What is the current in the wire?

Answer in units of  $\text{mA}$ .

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**004 10.0 points**

A  $0.6\ \text{V}$  potential difference is maintained across a  $2.1\ \text{m}$  length of tungsten wire that has a cross-sectional area of  $0.62\ \text{mm}^2$ .

What is the current in the wire? The resistivity of the tungsten is  $5.6 \times 10^{-8}\ \Omega \cdot \text{m}$ .

Answer in units of  $\text{A}$ .

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**005 (part 1 of 2) 10.0 points**

An electric heater operating at full power draws a current of  $15.3\ \text{A}$  from a  $188\ \text{V}$  circuit.

What is the resistance of the heater?

Answer in units of  $\Omega$ .

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**006 (part 2 of 2) 10.0 points**

Assuming constant  $R$ , how much current should the heater draw in order to dissipate  $1120\ \text{W}$ ?

Answer in units of  $\text{A}$ .

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**007 (part 1 of 2) 10.0 points**

The wire in a house circuit is rated at  $21.5\ \text{A}$  and has a resistance of  $0.22\ \Omega$ .

What is its power rating?

Answer in units of  $\text{W}$ .

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**008 (part 2 of 2) 10.0 points**

How much heat does the wire give off in  $19.6\ \text{min}$ ?

Answer in units of  $\text{J}$ .

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**009 (part 1 of 4) 10.0 points**

An object with a resistance of  $21\ \Omega$  has  $57\ \text{V}$  applied to it.

How much electric current is going through this object?

Answer in units of  $\text{amps}$ .

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**010 (part 2 of 4) 10.0 points**

How much power is being produced by the object?

Answer in units of  $\text{W}$ .

---

**011 (part 3 of 4) 10.0 points**

How much electric energy will be needed to operate this object for  $17\ \text{h}$ ?

Answer in units of  $\text{kWh}$ .

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**012 (part 4 of 4) 10.0 points**

What is the cost of operating this object for  $17\ \text{h}$  at a rate of  $8.1\ \text{cents/kWh}$ ?

Answer in units of  $\$$ .

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**001 10.0 points**

According to Ohm's Law, if the resistance in a circuit is  $40\ \Omega$  and the voltage is  $7.9\text{ V}$ , what will be the current flow in the circuit?

1.  $0.1975\text{ A}$
2.  $316\text{ A}$
3.  $5.06329\text{ A}$
4.  $32.1\text{ A}$
5.  $47.9\text{ A}$

---

**002 10.0 points**

Which of the following is the formula for Ohm's law?

1.  $E = Pt$
2.  $P = IV$
3.  $I = VR$
4.  $I = \frac{V}{R}$

---

**003 10.0 points**

A total charge of  $7.89\text{ mC}$  passes through a cross-sectional area of a wire in  $0.851\text{ s}$ .

What is the current in the wire?

Answer in units of  $\text{mA}$ .

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**004 10.0 points**

A  $1\text{ V}$  potential difference is maintained across a  $2.3\text{ m}$  length of tungsten wire that has a cross-sectional area of  $0.86\text{ mm}^2$ .

What is the current in the wire? The resistivity of the tungsten is  $5.6 \times 10^{-8}\ \Omega \cdot \text{m}$ .

Answer in units of  $\text{A}$ .

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**005 (part 1 of 2) 10.0 points**

An electric heater operating at full power draws a current of  $14.1\text{ A}$  from a  $182\text{ V}$  circuit.

What is the resistance of the heater?

Answer in units of  $\Omega$ .

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**006 (part 2 of 2) 10.0 points**

Assuming constant  $R$ , how much current should the heater draw in order to dissipate  $1010\text{ W}$ ?

Answer in units of  $\text{A}$ .

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**007 (part 1 of 2) 10.0 points**

The wire in a house circuit is rated at  $21.7\text{ A}$  and has a resistance of  $0.28\ \Omega$ .

What is its power rating?

Answer in units of  $\text{W}$ .

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**008 (part 2 of 2) 10.0 points**

How much heat does the wire give off in  $23.6\text{ min}$ ?

Answer in units of  $\text{J}$ .

---

**009 (part 1 of 4) 10.0 points**

An object with a resistance of  $45\ \Omega$  has  $180\text{ V}$  applied to it.

How much electric current is going through this object?

Answer in units of  $\text{amps}$ .

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**010 (part 2 of 4) 10.0 points**

How much power is being produced by the object?

Answer in units of  $\text{W}$ .

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**011 (part 3 of 4) 10.0 points**

How much electric energy will be needed to operate this object for  $21\text{ h}$ ?

Answer in units of  $\text{kWh}$ .

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**012 (part 4 of 4) 10.0 points**

What is the cost of operating this object for  $21\text{ h}$  at a rate of  $7.8\text{ cents/kWh}$ ?

Answer in units of  $\text{\$}$ .

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This print-out should have 12 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

Finish this by Weds at 6:00pm. Solutions can be downloaded after 6:01.

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**001 10.0 points**

According to Ohm's Law, if the resistance in a circuit is  $26\ \Omega$  and the voltage is  $5.3\ \text{V}$ , what will be the current flow in the circuit?

1.  $0.203846\ \text{A}$
2.  $137.8\ \text{A}$
3.  $31.3\ \text{A}$
4.  $20.7\ \text{A}$
5.  $4.90566\ \text{A}$

---

**002 10.0 points**

Which of the following is the formula for Ohm's law?

1.  $P = IV$
2.  $I = \frac{V}{R}$
3.  $I = VR$
4.  $E = Pt$

---

**003 10.0 points**

A total charge of  $2.86\ \text{mC}$  passes through a cross-sectional area of a wire in  $3.1\ \text{s}$ .

What is the current in the wire?

Answer in units of  $\text{mA}$ .

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**004 10.0 points**

A  $1.29\ \text{V}$  potential difference is maintained across a  $1.5\ \text{m}$  length of tungsten wire that has a cross-sectional area of  $0.33\ \text{mm}^2$ .

What is the current in the wire? The resistivity of the tungsten is  $5.6 \times 10^{-8}\ \Omega \cdot \text{m}$ .

Answer in units of  $\text{A}$ .

---

**005 (part 1 of 2) 10.0 points**

An electric heater operating at full power draws a current of  $14.3\ \text{A}$  from a  $215\ \text{V}$  circuit.

What is the resistance of the heater?

Answer in units of  $\Omega$ .

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**006 (part 2 of 2) 10.0 points**

Assuming constant  $R$ , how much current should the heater draw in order to dissipate  $1090\ \text{W}$ ?

Answer in units of  $\text{A}$ .

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**007 (part 1 of 2) 10.0 points**

The wire in a house circuit is rated at  $15.8\ \text{A}$  and has a resistance of  $0.12\ \Omega$ .

What is its power rating?

Answer in units of  $\text{W}$ .

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**008 (part 2 of 2) 10.0 points**

How much heat does the wire give off in  $22.4\ \text{min}$ ?

Answer in units of  $\text{J}$ .

---

**009 (part 1 of 4) 10.0 points**

An object with a resistance of  $15\ \Omega$  has  $53\ \text{V}$  applied to it.

How much electric current is going through this object?

Answer in units of  $\text{amps}$ .

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**010 (part 2 of 4) 10.0 points**

How much power is being produced by the object?

Answer in units of  $\text{W}$ .

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**011 (part 3 of 4) 10.0 points**

How much electric energy will be needed to operate this object for  $24\ \text{h}$ ?

Answer in units of  $\text{kWh}$ .

---

**012 (part 4 of 4) 10.0 points**

What is the cost of operating this object for  $24\ \text{h}$  at a rate of  $8.1\ \text{cents/kWh}$ ?

Answer in units of  $\$$ .

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